pound, this property is also possessed by the CO and N_2O_3 compounds of hæmoglobin, as well as by the nitrite compounds of oxidized hæmoglobin. It is probable that we may now find that a large number of condensed bodies have the property, like the nitrites, of forming combinations with the blood-colouring-matter.

II. "Microscopical characters of the rhythmically contractile Muscular Coat of the Veins of the Bat's Wing, of the Lymphatic Hearts of the Frog, and of the Caudal Heart of the Eel. In Three Parts.—Part I. Microscopical characters of the rhythmically contractile Muscular Coat of the Veins of the Web of the Bat's Wing." By THOMAS WHARTON JONES, F.R.S., Professor of Ophthalmic Medicine and Surgery in University College, &c. Received April 8, 1868.

(Abstract.)

This is Part I., of a series of three, of a paper on the microscopical characters of rhythmically contractile muscular tissue, other than that of the blood-heart. It comprises a reexamination of the microscopical characters of the *rhythmically* contractile muscular coat of the veins of the bat's wing, and is offered by the author as Appendix No. 3 to his paper in the Philosophical Transactions for 1852, entitled "Discovery that the veins of the Bat's Wing (which are furnished with valves) are endowed with rhythmical contractility, and that the onward flow of the blood is accelerated by each contraction." This reexamination supplies additional details, illustrated by more correct figures, confirmatory of the author's previous description of the microscopical characters of the muscular coat of the veins of the bat's wing. The author examines also, by way of comparison, the *tonically* contractile muscular coat of the arteries, and points out that, though the fibrils of the muscular coat of the veins do not present transverse markings, they differ in their microscopical characters as much from the fibrils of the muscular coat of the arteries, as the transversely striped muscular fibrils of the bat's heart do from them. He insists, therefore, in conclusion, that there are no grounds for an implied physiological form of the doctrine of isomerism, viz. similarity of structure, with different endowments.

Part II. "Microscopical characters of the rhythmically contractile Muscular Coat of the Lymphatic Hearts of the Frog." Received April 13, 1868.

The author, in this second part of his paper, first calls attention to the fact that, on viewing the anterior lymphatic heart from the front, after dissecting down upon it from the back, he sometimes found its cavity filled with air or blood. The way by which the air or blood had entered

he considers to have been through the lymph-spaces opened into in the course of the dissection ; and the mode of entrance he considers to have been by suction during diastole of the heart. The sucking action, by which the heart thus draws air or blood into its cavity when the lymph-spaces are cut into, must operate, according to his view, as a means of promoting the flow of lymph in the natural state. After describing the mechanism of the process, the author examines the microscopical characters of the proper muscular tissue composing the wall of the lymphatic heart. The result of his observations on this point is, that the muscular tissue of the lymphatic hearts of the frog is similar to that of the veins of the bat's wing, as regards both its granular semitransparent aspect and the breadth of its fibrillations, whilst it differs from the muscular tissue of the blood-heart of the animal in being destitute of transverse markings.

Part III. "Microscopical characters of the rhythmically contractile Muscular Coat of the Caudal Heart of the Eel." Received April 21, 1868.

The caudal heart of the eel lies in a kind of framework on the abdominal aspect of the extreme end of the vertebral column. The body of the last caudal vertebra forms the dorsal side of this framework, and a ridge of bone, extending along its concave abdominal aspect, must project into the caudal heart, partially dividing it into right and left compartments. The caudal heart of the eel would thus appear to represent the two caudal sinuses of certain other fishes *run into one*.

From the manner in which the caudal heart is connected with the surrounding structures of the tail, its movements are communicated to them as described in the author's paper, entitled "The Caudal Heart of the Eel, a Lymphatic Heart," &c. By the elastic recoil of the structures, on the other hand, the cavity of the heart is drawn into a state of dilatation ; and the result must be, as in the analogous case of the anterior lymphatic hearts of the frog, that lymph will be forced into the heart from the adjacent lymphatic vessels or spaces.

The muscular fibres composing the walls of the caudal heart resemble in shape the sheathed primitive fasciculi of the muscles of the skeleton, but are only half as broad, and they are not transversely striped. They have a granular aspect, and on close examination are found to be a fasciculus of fibrils $\frac{1}{10,000}$ of an inch broad, contained in a delicate structureless sheath. These fibrils resemble the fibrils of the muscular coat of the veins of the bat's wing, and of the muscular coat of the lymphatic hearts of the frog, and may be grouped, the author thinks, together with them under a common head, viz. *unstriped rhythmically contractile muscular fibrils*.